Limited Warranty

- Empi warrants all of their manufactured products to be free from defects in workmanship and materials for three years.
- Battery charger bases, rechargeable batteries,carry cases, lead wires, electrodes and other accessories are warranted to be free from defects in workmanship and materials at the time of delivery.
- Empi will repair or replace, at its facility, any product found to be defective within the warranty period. This warranty does not apply to any product damaged by misuse, or repaired or altered by anyone other that Empi, Inc.
- This warranty is in lieu of any or all other warranties, expressed or implied. No person is authorized to bind Empi to any representation of warranty other than those specifically set forth herein.

NOTE: The warranty period begins with the date of purchase from the manufacturer.

Empi, Inc.
205 Highway 22 East
Clear Lake, SD 57226

For more information call **1.800.328.2536** or visit **www.empi.com**

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Caution: Federal law restricts this device to sale by or on the order of a physician.

Empi

a better prescription for pain™

IF 3WAVE®

IF 3WAVE® USER'S MANUAL

Pain Management

Rehabilitation

Edema Reduction

Read This Manual Carefully Before Operating Your IF 3WAVE®

Empi

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Introduction

Congratulations! Your physician has prescribed Empi's IF 3WAVE system to help you with pain management and rehabilitation therapy. Empi is dedicated to helping you regain your active lifestyle—from our field sales representatives training you how to use the system, to our patient coordinators following up with you. We make your success our goal.

How the IF 3WAVE System Works

The IF 3WAVE is a digital, dual channel, interferential (IF) current device. Modalities also included are neuromuscular electrical stimulation (NMES), pulse direct current (PDC), and IF/NMES combination stimulation. The device sends electrical impulses through the skin. These impulses stimulate the nerves or muscle fibers. The IF 3WAVE is used by a variety of patients, in conjunction with other forms of therapy, to treat acute and chronic pain, edema, muscle spasms, and increase muscle strength and retard muscle disuse atrophy.

The operating components of the system are: the IF 3WAVE device, lead wires, electrodes and charger base. The IF 3WAVE device is battery-operated, lightweight and portable. It features an LCD user interface screen and easy to use push buttons. The lead wires connect the device to electrodes, which are placed on the skin. The device is then used to send cycles of electrical stimulation through the lead wires and electrodes into the skin. When combined, the components complete an electrical circuit, allowing current to flow through the skin, delivering the desired treatment stimulation.

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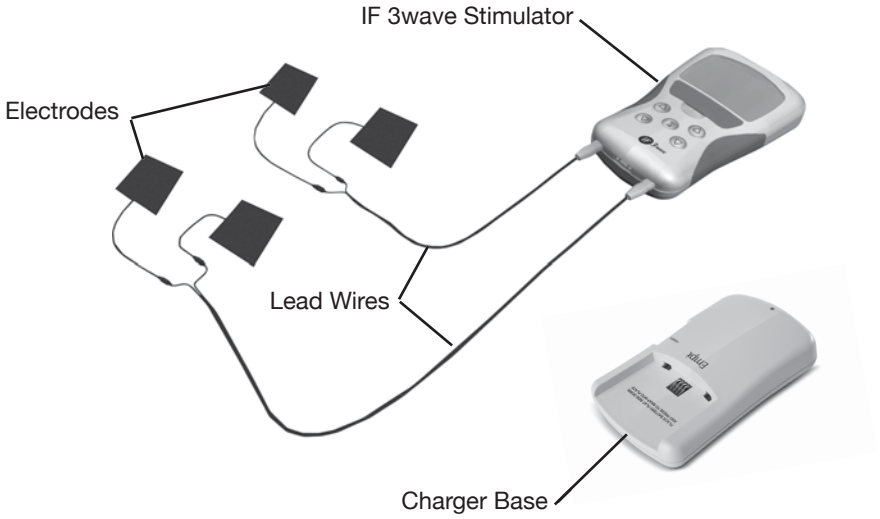
Introduction



Main Operating Components

Consult your healthcare professional (clinician) if you have specific questions or problems regarding the use of the device. They are most familiar with your situation and are the best source of additional guidance. This system should be used only under proper medical supervision and only as described by this manual.

Before using your IF 3WAVE system, please read all of the indications, contraindications, warnings and precautions in the Prescribing Information section.

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About This Manual

This manual describes the IF 3WAVE system and provides instructions for using it. Please read the entire manual carefully.

IMPORTANT: The IF 3WAVE screens are provided in English, Spanish (USA), and French (Canada). If the operator cannot read these languages, all instructions must be read and discussed in the operator's native language.

IMPORTANT : Les écrans IF 3WAVE sont traduits en anglais, espagnol (Amérique du sud) et français (Canada). Si l'opérateur ne peut lire ces langues, toutes les instructions doivent être lues et discutées dans la langue maternelle de l'opérateur.

IMPORTANTE: Las pantallas de IF 3WAVE se proporcionan en inglés, español (EE.UU.) y francés (Canadá). Si el operador no puede leer ninguno de estos idiomas, todas las instrucciones deberán leerse y comentarse en la lengua materna del operador.

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Notes

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Prescribing Information

In general, stimulation should be used under medical supervision for adjunctive therapy in the management of specific conditions.

The following information is contained in this section:

- Indications
- Contraindications
- Warnings
- Precautions
- Adverse Effects

Indications

Interferential (IF) stimulation can be used for the following applications:

- Relieve acute pain
- Relieve and manage chronic pain
- Relax muscle spasms
- Maintain and increase range of motion
- Increase local blood circulation

Neuromuscular electrical stimulation (NMES) can be used for the following applications:

- Relax muscle spasms
- Prevent or retard disuse atrophy
- Increase local blood circulation
- Re-educate muscles
- Maintain or increase range of motion

Pulsed direct current (PDC) stimulation can be used for the following applications:

- Reduce edema (under negative electrode)
- Reduce muscle spasm
- Increase local blood circulation (under negative electrode)
- Retard or prevent disuse atrophy
- Facilitate voluntary motor function
- Maintain or increase range of motion

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Prescribing Information

Contraindications

Cardiac pacemakers – Do not use this device if the patient has a demand-type cardiac pacemaker or any implanted defibrillator.

Transcerebral stimulation – Do not apply electrical stimulation transcerebrally (through the head).

Carotid sinus – Do not use electrical stimulation over the carotid sinus (neck) nerves.

Unknown etiology – Do not use this device when pain syndromes are undiagnosed. Use only after origin of pain has been diagnosed.

Warnings

Supervised use – This device should be used under the continued supervision of a physician.

Long-term effects – The long-term effects of chronic use of electrical stimulation are unknown. Electrical stimulation devices do not have any curative value.

Symptomatic treatment – This device is a symptomatic treatment and, as such, suppresses the sensation of pain, which would otherwise serve as a protective mechanism.

Central origin pain – Electrical stimulation is not effective for central origin pain such as headache.

Pregnancy – The safety of using electrical stimulation during pregnancy or birth has not been established.

Neck stimulation – Severe spasm of the laryngeal and pharyngeal muscles may occur when the electrodes are placed across the neck or mouth. This may be strong enough to close off the airway or cause breathing difficulty.

Transthoracic stimulation – Do not apply electrical stimulation transthoracically (through the chest area) in that the introduction of electrical current into the heart may cause cardiac arrhythmias.

Skin and vascular problems – Do not use this device over infected areas, skin eruptions, or areas of decreased sensation.

Cancer patients – Do not use this device over known cancerous sites.

Heart disease – Precaution should be taken prior to using electrical stimulation on patients suspected of having heart disease.

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High frequency surgical devices – Simultaneous connections of a patient to a high frequency surgical device may result in burns at the site of the electrodes and possible damage to the device.

Damage from liquids – Do not immerse the device in water or other liquids.

Lead connection – Do not connect the lead wires to an AC power source or other equipment not specified as safe for the lead wires.

Cautions

Heart Disease – Use caution prior to using this device on patients suspected of having heart disease.

Epilepsy – Use caution for patients with suspected or diagnosed epilepsy when using this device.

Hemorrhages – Use caution when there is a tendency to hemorrhage, such as following acute trauma or fracture.

Postsurgical use – Use caution following recent surgical procedures when muscle contraction may disrupt the healing process.

Uterus – Do not use electrical stimulation over a menstruating or pregnant uterus.

Sensory loss – Do not use electrical stimulation where sensory nerve damage is present by a loss of normal skin sensation.

Unequal electrode size – Using different size electrodes together can cause skin irritation or increased stimulation intensity under the smaller electrode. Some programs may require the use of different sized electrodes for treatment.

Skin irritation – If patient experiences skin irritation due to electrical stimulation or the electrical conductive medium used, remove the electrodes, discontinue stimulation and consult the clinician. Irritation may be reduced by an alternative conductive medium or an alternative electrode placement. Isolated cases of skin irritation may occur at the site of electrode placement following longterm application.

Prescription – Use electrical stimulation only in the prescribed manner and for the prescribed diagnosis.

Effectiveness – Effectiveness is highly dependent upon patient selection by a clinician qualified in the management of pain or rehabilitation.

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Prescribing Information

Keep out of reach of children – Keep this device out of reach of children. If the patient is a child, make sure he/she is properly supervised during the electrical stimulation.

Leads and electrodes – Use the device with only the leads and electrodes provided for use by the manufacturer. Use only the electrode placements and stimulation settings prescribed by your practitioner.

Electrode usage – Other market-released electrodes may be used as recommended by your practitioner.

IF Mode - It is advisable not to use electrodes smaller than 4 sq. in. (25 sq. cm) when the device is used in IF mode at higher amplitude settings to prevent skin burn and irritation. It is recommended that, at a minimum, 2" x 2" square electrodes are used when the device is operated in IF mode.

PDC Mode - It is advisable not to use electrodes smaller than 6 sq. in. (37.50 sq. cm) at the treatment area when the device is used in PDC mode at higher amplitude settings to prevent skin burn and irritation. In addition, it is advisable to use only carbon based electrodes at the treatment area when the device is used in PDC mode. It is recommended that, at a minimum, 2" x 4" carbon based, oval electrodes are used at the treatment area, and, at a minimum, a 5" x 8" rectangle, dispersive electrode is used at the dispersive area.

Microwave or radio frequency sources – Operation in close proximity, such as 3 feet (1 meter), to shortwave or microwave therapy equipment may produce instability in the device output and may shut the device off.

Electronic equipment – Electronic monitoring equipment (such as ECG and ECG alarms) may not operate properly when electrical stimulation is in use.

Machinery operation – Patient should never operate potentially dangerous machinery such as power saws, automobiles, etc. during electrical stimulation.

Flammable – Do not use the device in an environment where flammable or explosive fumes may exist.

External use – This device is for external use only.

Adverse Effects

Skin irritation, inflammation, and electrode burns beneath the electrodes are potential adverse reactions.

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Quick Reference

When you are very familiar with the operation of the IF 3WAVE system, use the following steps as a quick reference to operate the device. For more information, refer to the Operation section in this manual.

Running a Therapy Session

1. Wash and dry the skin areas where you will be applying the electrodes. Use skin prep if necessary.
2. Connect the lead wire(s) to the electrodes and the device.
3. Apply the electrodes to your skin.
4. On the device, press the on/off button to display the Program screen. The last program used will be highlighted. If no change is desired, wait 10 seconds and the highlighted program will operate.
5. Use the **Ch1** and **Ch2** ∧ and/or ∨ buttons to set the amplitude for each channel, as directed by your clinician.
6. When the therapy program ends, the device shuts off automatically.

   Otherwise, press the on/off button twice quickly, within two seconds, to shut the device off.

Changing a Therapy Session

1. Follow steps 1 through 4 in Running a Therapy Session above.
2. To select a new program, press the **Ch1** ∧ or ∨ button to highlight the desired therapy program.
3. Press the **Ch2** ∧ or ∨ button to select a program.
4. Use the **Ch1** and/or **Ch2** ∧ and ∨ buttons to set the amplitude for each channel, as directed by your clinician.
5. When the therapy program ends, the device shuts off automatically.

   Otherwise, press the on/off button twice quickly, within two seconds, to shut the device off.

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Quick Reference

Ending a Session Prior to the End of Therapy

1. Press the on/off button twice quickly, within two seconds, to shut the device off.
2. Unclip the belt clip from your clothing.
3. Disconnect the lead wire(s) from the device.
4. Disconnect the lead wire(s) from the electrodes.
5. Remove the electrodes from your skin. Follow the instructions on the electrode package for storing electrodes. If necessary, use adhesive remover to remove any remaining adhesive (or gel) from your skin.
6. Optionally, use skin cream or lotion to moisturize your skin after removing the electrodes.
7. Optionally, remove the battery from the device prior to storing.
8. Store the components in the carrying case.

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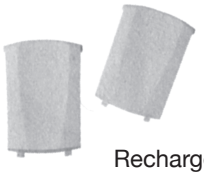
System Components

Contents of the Standard Package

The IF 3WAVE system contains the following components:

IF 3wave Stimulator



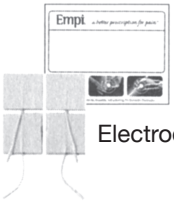
Rechargeable Batteries

Charger Base

Power Adaptor

Lead Wires (2)

Reverse Splitter



Electrodes

Belt Clip

Carrying Case

Main Components

Additional components: IF 3WAVE User's Manual and medical documentation.

You may receive an alternate charger.

The modem base and the telephone jack on this style of charger are no longer available.

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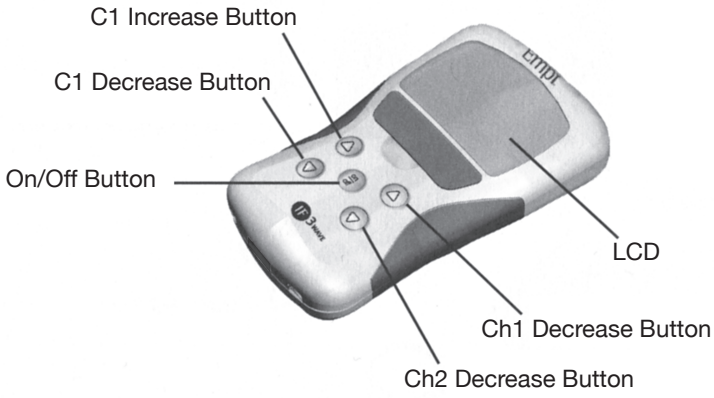
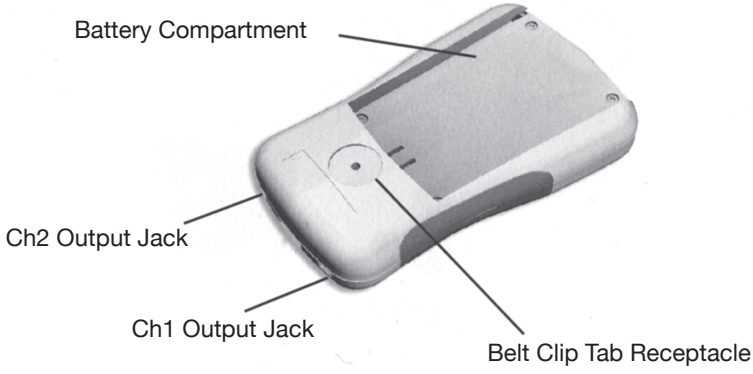
System Components

Device

The IF 3WAVE is a battery-operated electrical stimulator. The device has preset programs and treatment programs that can be customized by a clinician.



Stimulator Front View



Stimulator Back View

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Device Physical Features

LCD Screen

This is the area that displays the therapy settings as you program and use the stimulator.

Operating Buttons

These are the buttons you use to program your therapy settings, such as selecting the treatment program and intensity.

- **On/Off –** used to turn the stimulator on and off.
- **Ch1 Increase –** used to increase the intensity (amplitude) of the electrical impulses sent through the channel 1 output jack.
- **Ch1 Decrease –** used to decrease the intensity (amplitude) of the electrical impulses sent through the channel 1 output jack.
- **Ch2 Increase –** used to increase the intensity (amplitude) of the electrical impulses sent through the channel 2 output jack.
- **Ch2 Decrease –** used to decrease the intensity (amplitude) of the electrical impulses sent through the channel 2 output jack.

Battery Compartment

The device holds one rechargeable battery. The battery clips into the compartment only one way.

Output Jacks

The output jacks are where you connect the lead wires. The output jack labeled Ch1 is the channel 1; Ch2 is the channel 2. Each jack is shaped like an old-fashioned keyhole. Each lead wire has a corresponding plug that matches the shape of the jack. Position the plug so that its shape matches the jack pattern. Forcing the plug into the jack incorrectly could cause damage to the device.

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System Components

Rechargeable Batteries

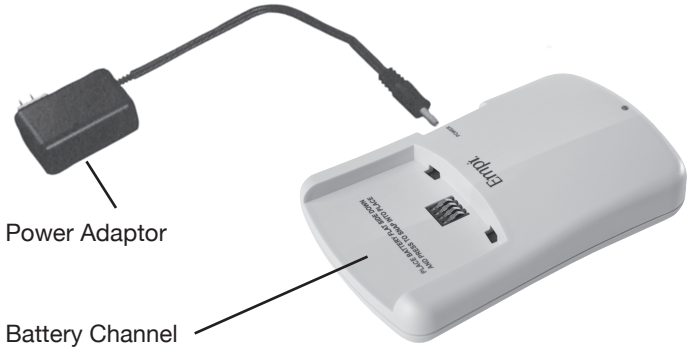
The IF 3WAVE is supplied with two rechargeable Lithium ion batteries. The device uses only one battery at a time. While one battery is in use, the other can be recharged in the charger base.

Charger Base

The charger base serves one purpose:

- Charges the battery

The battery charger recharges the device's battery. The charger base is supplied with a power adaptor.



Charger Base

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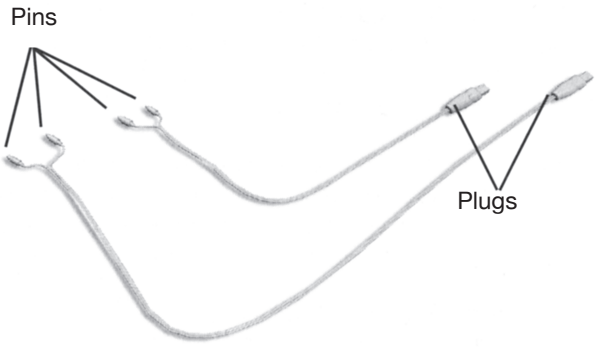
System Components

Power Adaptor

The power adaptor supplies power to the charger base to recharge the batteries.

Lead Wires

Lead wires are wires that connect the device to the electrodes. They carry the electrical pulses from the device to the electrodes on your skin. You must have an electrode on both the red (+) and the black (-) pins for the device to work properly.



Lead Wires

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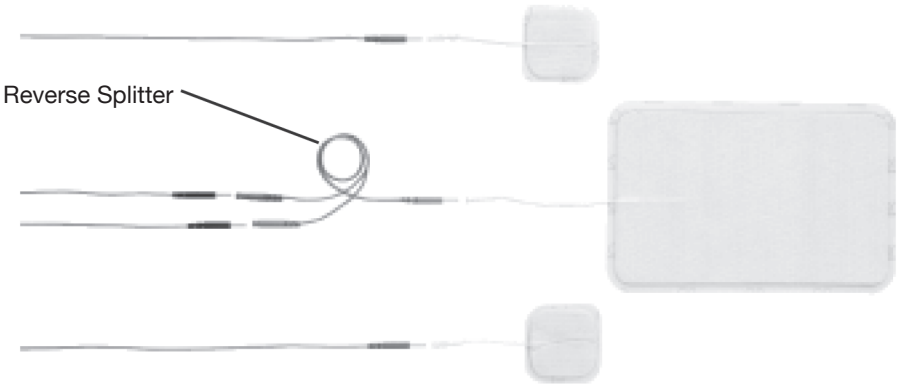
System Components

Reverse Splitter

The reverse splitter is connected to the lead wires when using two channel PDC (Pulse Direct Current). The black pins from both Ch1 and Ch2 must be connected to the female connectors on the reverse splitter. The pin connector on the reverse splitter should be connected to the large dispersive electrode for the device to work properly. The reverse splitter is not used for one channel PDC treatments.

Reverse Splitter



Reverse Splitter Connected to Electrodes

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Electrodes

Use the device with only the leads and electrodes provided for use by the manufacturer. Use only the electrode placements and stimulation settings prescribed by your practitioner.

Other market-released electrodes may be used as recommended by your practitioner.

IF Mode - It is advisable not to use electrodes smaller than 4 sq. in. (25 sq. cm) when the device is used in IF mode at higher amplitude settings to prevent skin burn and irritation. It is recommended that, at a minimum, 2" x 2" square electrodes are used when the device is operated in IF mode.

PDC Mode - It is advisable not to use electrodes smaller than 6 sq. in. (37.50 sq. cm) at the treatment area when the device is used in PDC mode at higher amplitude settings to prevent skin burn and irritation. In addition, it is advisable to use only carbon based electrodes at the treatment area when the device is used in PDC mode. It is recommended that, at a minimum, 2" x 4" carbon based, oval electrodes are used at the treatment area, and, at a minimum, a 5" x 8" rectangle, dispersive electrode is used at the dispersive area.

A variety of electrode styles can be used, including the following types:

- Reusable, self-adhering
- Disposable, multi-day
- Carbon rubber

Refer to the following subsections and the information on the electrode packages for use and care information for each electrode type. Following these instructions will maximize their effectiveness and longevity.

Inspect your electrodes before every use. Replace electrodes as needed. Reusable electrodes may cause slight skin irritation, lose adhesion and deliver less stimulation if overused.

If you need additional electrodes, contact Empi at 1-800-328-2536.

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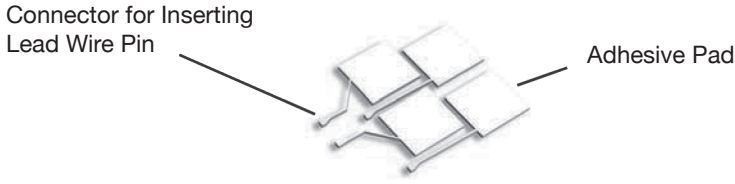
System Components



Reusable, Self-adhering Electrodes

NOTE: The large, single electrode (Dispersive Electrode) is used for one channel and two channel PDC treatments. Before using, please refer to the Setting Up PDC Programs in the Clinician section.

Reusable, Self-adhering Electrodes

Empi offers a complete line of reusable, self-adhering electrodes, which are available in a variety of sizes and shapes.

To use these electrodes:

1. Attach the electrode to the lead wire.
2. Remove the protective backing from the electrode surface. Do not throw away the protective backing because it is reused after the treatment session has been completed.
3. Place the tacky surface to the prescribed skin area by pressing the electrode firmly against the skin.

To remove your electrodes:

1. Lift the corner of the electrode and gently remove it from the skin.
2. Apply the protective backing to the tacky side of the electrode. Place the electrode on the side of the protective backing that is labeled with the word, On.
3. Store the electrodes in the resealable pouch or a plastic bag.

Caution ⚠

Do not pull on the electrode wire. Doing so may damage the wire and eletrode.

To prolong the life of these electrodes, apply a drop of tap water to the tacky side when they show signs of drying out or of losing their stickiness. This can be done before use or storage.

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Disposable, Multi-day Electrodes

Empi offers a complete line of disposable, multi-day electrodes, which are available in a variety of sizes and shapes.

To use these electrodes:

1. Attach the lead wire to the electrode. If nesessary, moisten the pin on the lead wire to make insertion easier.
2. Remove the liner from the tape patch and discard.
3. Apply the electrode to the prescribed skin area.
4. Replace electrodes that do not adhere properly to the skin or that fail to deliver proper stimulation.

Carbon Rubber Electrodes

Some carbon rubber electrodes require a conductive medium, such as a conductive gel, while others have self-adhering gel already in place.

To use these electrodes:

1. Remove the backing from the center of the electrode tape patch and attach it to the back of the electrode. The raised portion of the electrode should protrude through the tape.
2. Moisten the lead wire pin to make insertion easier.
3. Insert the metal pin from the lead wire into the hole on the back of the electrode.
4. Identify the side of the electrode to be attached to your skin, and cover its entire surface with electrode gel (if necessary).
5. Remove the rest of the tape backing.
6. Position the electrode over the prescribed skin area and press the tape and electrode firmly onto the skin.

Warning ⚠

Do not moisten the lead wire pin in your mouth. Doing so can cause severe injury or death.

Caution ⚠

Do not pull on the electrode wire. Doing so may damage the wire and electrode.

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System Components

Carrying Case

A carrying case is included to help protect the IF 3WAVE system and keep it clean. Store your device and its components in the case when they are not in use.

Documentation

Read and understand this user's manual carefully before operating the IF 3WAVE device. The device is provided in English, Spanish (USA), and French (Canada). If you have questions or cannot read these languages, contact your clinician.

Belt Clip

A belt clip is provided so that the IF 3WAVE unit can be securely clipped to a belt or other clothing, allowing you to go about your activities.

Notes

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Operation

Overview

Caution

United States Federal Law restricts this device to sale by or on the order of a physician or licensed practitioner.

This section includes the following instructions for performing a therapy session. Perform these instructions in the order they are presented:

- Installing the IF 3WAVE's Battery
- Connecting the Lead Wires to the Electrodes
- Connecting the Lead Wires to the Device
- Preparing the Skin for a Therapy Session
- Applying the Electrodes to the Skin
- Using the Device for a Therapy Session
- Ending a Therapy Session

This section also includes the following instructions:

- Charging the Battery
- Storing the Battery
- Caring for the IF 3WAVE System
- Understanding Special Display Messages
- Finding the Software Revision and Serial Number
- Using the Belt Clip

Before operating the IF 3WAVE System, read the previous sections of this manual that describe the system and its features. To gain the maximum benefit from your IF 3WAVE System, carefully follow your clinician's instructions and use the system for only the specific symptoms detailed by your clinician. If you have any questions or problems, or experience any new symptoms or painful areas, contact your physician, therapist, or clinician for appropriate diagnosis and treatment. They are most familiar with your specific situation and are the best source of additional guidance.

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Operation

Installing the IF 3WAVE Battery

The IF 3WAVE operates with a removable, rechargeable Lithium ion battery. Two are supplied with the device. Additional batteries can be ordered by contacting Empi at 1-800-328-2536. For information about charging the battery, refer to Charging the Battery in this Operation section.

Install the battery before using the device. Recharge the battery whenever the Battery Low message appears in the device's LCD screen. For information about the display messages, refer to Understanding Special Display Messages in this Operation section.

Warnings

- Do not connect the device to any electrical outlet.
- Do not attempt to remove moisture from the battery with heat. Excessive heat can cause the battery to explode, catch fire and leak chemicals.

Failure to observe these warnings can result in severe personal injury or death or cause damage to the device and battery.

Cautions

- Do not use other battery types. Use only Empi battery, Part Number 360102, which is designed for the system.
- When storing the batteries for long periods of time, they should be charged at least every six months.
- Replace a battery that has been immersed in water or liquid.
- Never heat the battery or throw it into a fire.
- Fully drain the electrical charge from the battery before recharging.
- If the battery is leaking a liquid, do not touch the liquid with bare skin.
- Dispose of the battery according to current federal, state and local regulations.

Failure to observe these precautions can result in injury, damage to the device and battery, or the environment.

Return used batteries to:
Empi
205 Hwy. 22 East
Clear Lake, SD 57226

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To install the battery into the device:

1. Place the device face down in the palm of your hand.
2. Slide the battery into the battery channel until it clicks. The Empi label on the battery should be facing down.

Battery Installation

Caution

Never force the battery into the battery channel or charger base. Forcing it can damage the device and battery.

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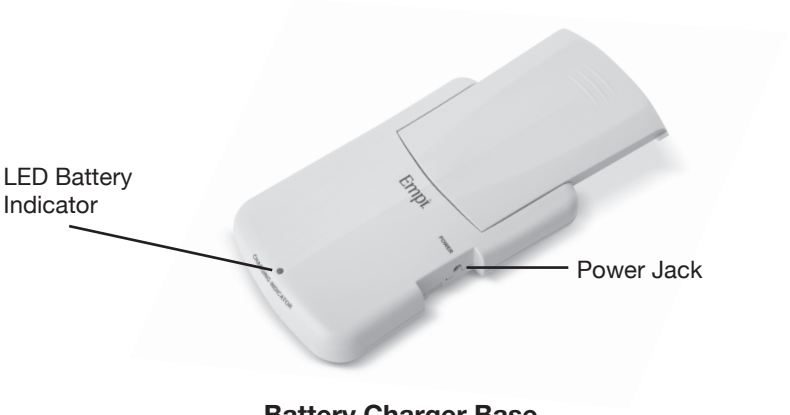
Operation

Charging the Battery

The battery must be removed from the IF 3WAVE and placed in the charger base to charge it. Fully charge the battery approximately 4.5 hours before using it again. It is a good practice to drain the batteries completely before recharging them.



Battery Charger Base

Caution

Never force the battery into the battery channel. Forcing it can damage the charger base and battery.

Battery LED Indicator

Bright green	Battery is charging.
No green (light off)	Battery recharge is complete.
Red	Battery is defective. Charger shuts down. Remove battery and call technical support.
Orange	Battery is overheating. Charger shuts down until battery is cool.

To charge the battery:

1. Plug the power adapter into a standard 110 Vac outlet and the connector jack into the charger base.

2. Slide the battery into the battery channel on the charger base until it clicks. Make sure the Empi label on the battery is facing down.

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3. When the green LED shuts off, remove the battery from the charger base.

4. Unplug the power adapter.

Storing the Battery

The battery should be removed from the device when it is stored for long periods of time (more than two weeks). All batteries should be stored in the carrying case. Store all batteries in a dry location at 50 to 86 °F (10 to 30 °C) and away from direct sunlight.

Rechargeable batteries slowly lose their charge in storage so they should be recharged every six months. The batteries can loose their capacity to hold a charge when they are stored for long periods of time. You can renew their capacity by charging and discharging them several times. If your battery does not retain a charge during standard operation, contact Customer Service at 1-800-328-2536 to purchase a new one.

Connecting the Lead Wires to the Electrodes

To connect the lead wire(s) to the electrodes:

1. Decide if you are using one lead wire (two electrodes) or two lead wires (four electrodes). Follow your clinician's instructions.

2. Locate the pins at the ends of the lead wire(s). If necessary, refer to the illustration in the System Components section.

3. Locate the pin insertion points on two or four electrodes as necessary and do one of the following.
   - On a reusable, self-adhering electrode, the insertion point is at the loose end of the wire attached to the electrode, as shown in the next illustration.
   - On a disposable, multiple-day electrode, the insertion point is a small hole on the top of the electrode. There are two holes; use only one of them.
   - On a carbon rubber electrode, the insertion point is a small hole on the top of the electrode. There are two holes; use only one of them.

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Operation

NOTE: Refer to Reverse Splitter in the System Components section for complete instructions on connecting the lead wires to the electrodes with the reverse splitter when using PDC programs C1/2 pdc+red active and C1/2 dc–red active.

Electrode Connection to Lead Wire

NOTE: Refer to the electrode package for complete instructions.

4. With the electrodes still attached to the protective backing (reusable and disposable electrodes only), insert one lead wire pin into each electrode's insertion point. Insert the pins entirely so that no metal shows.

NOTE: If using disposable or carbon rubber electrodes, moisten the lead wire pin to make insertion easier. Connect only one lead wire to each electrode.

Warnings ⚠

Do not moisten lead wire pin in your mouth. Doing so can cause severe injury or death.

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Connecting the Lead Wires to the Device

To connect the lead wire(s) to the device:

1. Locate the plug(s) at the end of the lead wire(s). If necessary, refer to the illustration in the System Components section.
2. Locate the output jacks at the bottom of the device. They are labeled Ch1 for channel 1 and Ch2 for channel 2.

Lead Wire Connection to the Device

3. Insert one lead wire plug into each output jack. If using only one lead wire, use the Ch1 output jack.

NOTE: The lead wire plugs and jacks are key-shaped. Match the shapes when inserting the plugs.

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Operation

Preparing the Skin for a Therapy Session

Proper preparation of the skin covered by the electrodes allows more stimulation to reach targeted tissues, prolongs electrode life and reduces the risk of skin irritation.

To prepare your skin at the electrode placement sites:

1. Determine the placement sites for the electrodes. Follow your clinician's instructions.

NOTE: Your clinician generally has you place the electrodes above and below (or surrounding) the area of pain or along the "pain path" of your arm or leg.

2. Wash the area with mild soap and water (do not use alcohol). Rinse and dry thoroughly.

3. Trim excess body hair from the area with scissors (do not shave).

4. Optionally, apply skin prep to the area to form a protective barrier on your skin.

Applying the Electrodes to the Skin

1. Make sure the device is off.

2. Depending on the type of electrodes being used, do one of the following to prepare the first electrode for application.

- **Reusable, self-adhering electrodes** – remove the protective backing from the electrode and save the protective backing for reuse. DO NOT pull on the electrode's wire to remove the protective backing; rather bend the backing and peel the electrode from the backing.

  NOTE: If reusable electrodes begin to dry out or lose their stickiness, apply a drop of tap water to the adhesive side. (This can be done before use or storage).

- **Disposable, multi-day electrodes** – using the tabbed edge, remove the protective backing from the electrode. Discard the backing.

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- **Carbon rubber electrodes** –
  a) Remove and discard the center backing from the tape patch and attach the tape patch to the top of the electrode. The raised portion of the electrode should protrude through the tape.
  b) If necessary, cover the entire bottom surface of the electrode with electrode gel.
  c) Remove and discard the rest of the tape backing.

3. Place the adhesive (gel) surface of the electrode on the skin placement site prescribed by your clinician.
4. Press the entire surface of the electrode into place, making sure it is secure.
5. Repeat steps 2 through 4 for all electrodes.

NOTES:

- Inspect the electrodes before each use.
- Position the electrodes with a minimum of 1 inch between them; do not let them touch each other. Do not reposition the electrodes while the device is turned on.
- Do not place electrodes on cut, broken, or irritated skin. If skin irritation develops, immediately discontinue device use, remove the electrodes, and contact your clinician.
- For long-term stimulation, change electrode sites whenever possible. Contact your clinician for new placement sites.
- Replace self-adhesive electrodes that do not adhere well or fail to deliver proper stimulation.
- Do not overuse reusable electrodes. Doing so may cause skin irritation, loss of adhesion, and weak stimulation.
- Do not refrigerate electrodes. Keep them from heat sources. Refer to the electrode packaging for information about electrode use and care.
- For descriptions of the electrode types, refer to Electrodes in the System Components section.
- For more information about electrode placement, visit: www.empi.com.

Caution

As the electrode size gets smaller (below the standard 2 sq. in. or 4 sq. in. (25 sq. cm), the tendency for skin irritation increases.

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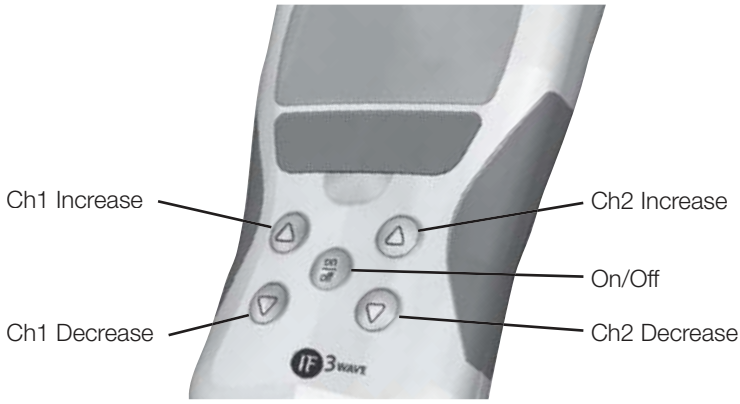
Operation

Using the Device for a Therapy Session

After inserting the battery, connecting the electrodes, connecting the lead wires, preparing the skin and applying the electrodes, you are ready to begin your therapy session.

Refer to the following illustration for button identification as you read the instructions. For more information about the buttons, refer to Device Physical Features in the System Components section of this manual.



Device Buttons

NOTES:

- The clinician can set the language that is displayed on the screen. If you need the device set up in another language, ask your clinician. The languages are English, Spanish (USA), and French (Canada).
- The following steps include selecting a program and setting the channel intensities. Read through the steps before actually performing them.

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- The device stores the last program used. To start the last program used, simply turn the device on and wait for the Programs screen to appear. The program will start automatically.
- If you change the mode during a therapy session, the amplitude returns to zero and must be reset. See the appropriate instructions for your treatment.
- The IF 3WAVE has an auto locking feature that prevents accidental amplitude adjustment in the IF, NMES, and PDC treatment programs. The clinician may enable or disable this feature for each program.
- If a message screen appears, refer to Understanding Special Display Messages in this section.

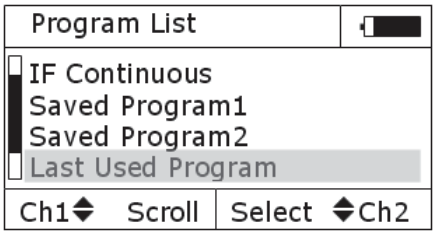
Running IF, NMES, and PDC Treatment Programs

Follow these procedures for all programs EXCEPT the IF/NMES combination treatment program. The IF/NMES combination procedures are provided in a later section of the manual.

NOTE: While performing the following steps, if you do nothing for two minutes, the device will shut off automatically. If this happens, start over with step 1.

To run most therapy programs:

1. Press and release the on/off button to turn the device on. Two title screens briefly appear on the display for 5 seconds and then the Program List screen appears. The last program used is highlighted and will automatically begin after 10 seconds if no other program is selected.



Program Selection Screen

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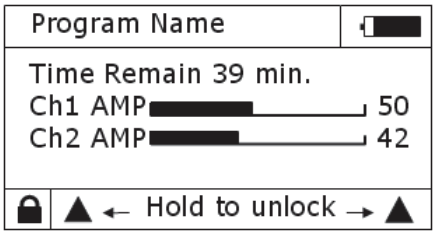
2. With the Program List screen displayed, immediately use either the **Ch1** Δ or ∇ buttons to select a different therapy program.

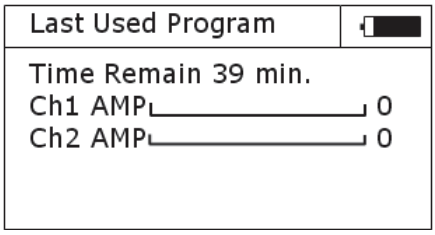
3. Press the **Ch2** Δ or ∇ buttons to select the program.
The Selected Program screen appears. The treatment time shows how much time is left in the treatment session and the amplitude is set at zero for both channels.



Selected Program Run Screen

NOTES: If you do nothing for 10 seconds, the highlighted program runs.

If you choose the wrong program, shut the device off and start over with step 1.



Last Used Program Screen

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4. To adjust the amplitude, do one of the following.

   a. **IF or PDC Treatments** – Use the **Ch1** or **Ch2** △ and ▽ buttons to set the amplitude for both channels, as directed by your clinician.

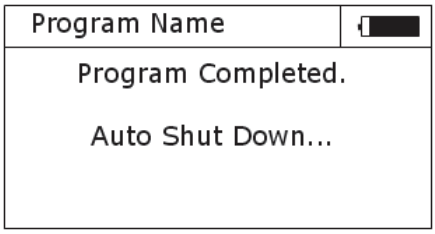
   b. **NMES Treatment** – Use the **Ch1** and **Ch2** △ and ▽ buttons to set the amplitude for each channel, as directed by your clinician. The amplitude for each channel can be different.

   As you adjust the amplitude, the bar on the screen changes to show the amplitude level. The numeric value is also displayed. The program starts 3 seconds after you stop making amplitude adjustments.

NOTES: Adjust the amplitude until it is comfortable—the stimulation should not cause discomfort.

30 seconds after you adjust the amplitude, the settings will lock to prevent accidental changes. To make adjustments, see Adjusting Amplitude During Treatment in this Operation section.

At the end of the session, the screen displays a message, Program Completed, and the device will shut down in 15 seconds.



Program Complete Screen

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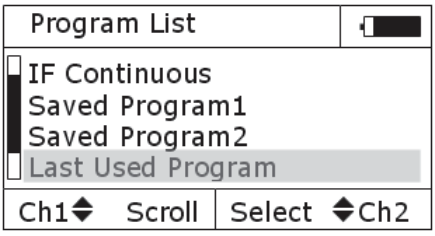
Operation

Running IF/NMES Combination Treatment Program

The IF/NMES program combines two treatment modes. The treatment begins with the IF program and then changes to a NMES program. When the NMES program ends, the IF program repeats. Each program runs 20 minutes and the total treatment time is 60 minutes.

To start an IF/NMES therapy session:

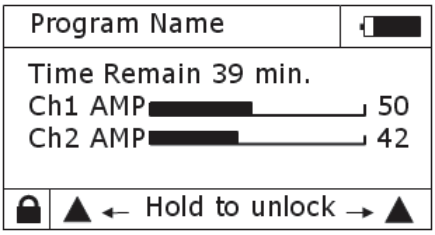
1. Press and release the on/off button to turn the device on. Two title screens briefly appear in the display and then the Program List screen appears. The last program used is highlighted.



Program Selection Screen

2. With the Program List screen displayed, immediately use either the **Ch1** ∧ or ∨ buttons to highlight the desired therapy program.

3. Press the **Ch2** ∧ or ∨ buttons to select the program.
The Selected Program screen appears. The treatment time shows how much time is left in the treatment session and the amplitude is set at zero for both channels.



Selected Program Run Screen

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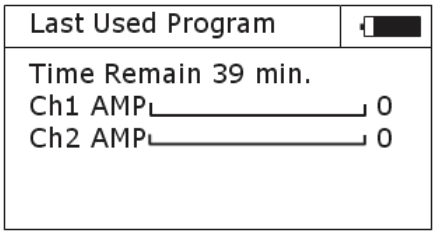
NOTES: If you do nothing for 10 seconds, the highlighted program runs.

If you choose the wrong program, shut the device off and start over with step 1.



Previously Used Program Screen

4. Use the **Ch1** and **2 Increase** and **Decrease** buttons to set the amplitude for each channel, as directed by your clinician. As you adjust the amplitude, the bar on the screen indicates the set amplitude relative to the maximum available (100%). The numeric value is also displayed.

NOTES: Adjust the amplitude until it is comfortable—it should not be uncomfortable. 30 seconds after you adjust the amplitude, the settings will lock to prevent accidental changes. To make adjustments, see Adjusting Amplitude During Treatment in this Operation section.

5. At the end of the IF program (20 minutes), the amplitude returns to zero. Within two minutes, you must set the amplitude for the NMES program which runs for 20 minutes.

6. At the end of the NMES program, the IF program repeats (20 minutes) and its amplitude returns to the previous IF amplitude setting. You do not have to reset it.

At the end of the session, the screen displays a message, Program Completed, and the IF 3WAVE will shut down in 15 seconds.

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Operation

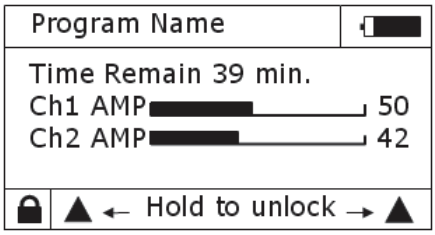
Adjusting Amplitude During Treatment

When you start an IF, NMES, PDC, or IF/NMES Combination treatment, you set the amplitude and the program starts, the amplitude locks at the desired setting after 30 seconds. If you wish to change the amplitude, follow these steps.

To adjust the amplitude during treatment:

NOTE: The auto lock feature may be disabled by the clinician.

1. If the device is locked, press and hold both **Ch1** and **Ch2** Δ buttons for 2 seconds.
2. Adjust the amplitude as desired. The setting will lock again after 30 seconds.



Key Unlock Screen

Ending a Therapy Session

After the therapy time expires, the device shuts off automatically. A message screen appears telling you the program is complete. You can also end a treatment session before it is completed by pressing the on/off button twice within 2 seconds.

To end a therapy session:

1. Ensure that the unit is off.
2. Disconnect the lead wire(s) from the device.
3. Disconnect the lead wire(s) from the electrodes.

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4. Depending on the type of electrodes being used, do one of the following to remove the electrodes from your skin:
    - **Reusable, self-adhering electrodes** – Remove the electrodes one at a time, placing each one on the saved protective backing as you remove it (adhesive side down). DO NOT pull on the electrode wires; gently peel the electrodes from your skin. Place the electrodes in their original, re-sealable plastic bag.
    - **Disposable, multi-day electrodes** – Leave these electrodes on for the number of days instructed by your clinician. When required, remove each electrode by lifting one edge and then peeling the electrode from your skin. Discard the electrodes.
    - **Carbon rubber electrodes** – Remove each electrode by lifting one edge of the tape patch and then peeling the patch from your skin. Clean and store the electrodes according to the manufacturer's instructions.
5. If necessary use adhesive remover to remove any remaining adhesive from your skin. Wash the skin area with mild soap and water (do not use alcohol). Optionally, use skin cream or lotion to moisturize your skin. For more information about adhesive remover and skin cream, refer to Skin Care Samples in the System Components section of this manual.
6. Optionally, remove the battery from the device. See Installing the Battery in this Operation section
7. Store the components in the carrying case.

To end a therapy session prior to the end of a program:

1. Press and release the on/off button twice. After pressing the button once, a screen appears asking you to confirm that you want to shut the power off. Press the button again. The device shuts off.
2. Follow steps 2 through 7 to end a therapy session above.

Operation

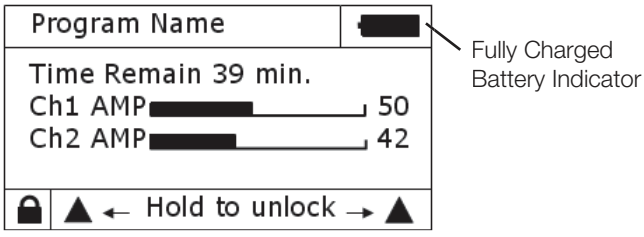
Caring for the IF 3WAVE System

Clean the outside of the device and lead wires as needed with a damp cloth and mild soap. Never immerse the device or lead wires in water, alcohol, or other fluids. Do not use cleaning fluids or solvents to remove stains or dirt. These liquids may damage the plastic case and lead wires.

Store all the operating components in the carrying case.

Understanding Special Display Messages

Battery Indicator and Battery Low



New Battery

The battery indicator appears on most screens in the upper right corner. When the battery is fully charged, the indicator is completely shaded black. As the device is used, the shaded area of the indicator becomes smaller.

NOTE: The approximate battery life of the IF 3WAVE is 10 hours to half intensity (amplitude) and 3 hours at full intensity.

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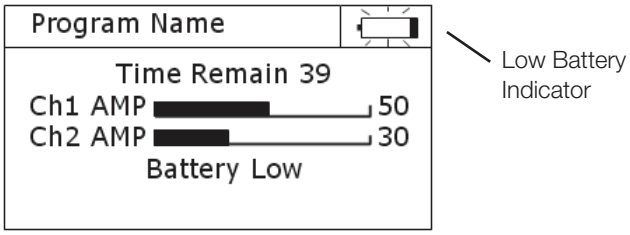

Battery Low Message

When the Battery Low message appears, use the device until it automatically shuts off. When the battery is completely depleted, a message appears on the screen informing you that the device will shut down. When the device automatically shuts off, the program must be restarted when a charged battery is installed. The device returns to start-up.

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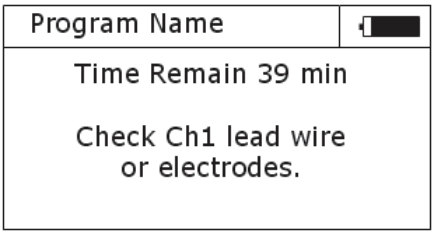
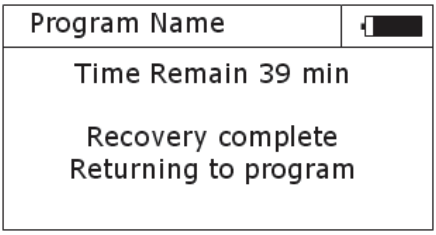
Operation

Open Lead



Check Leads Message

If a lead wire becomes disconnected or an electrode becomes separated from the skin, a message tells you to check the leads and electrodes, as shown above. Ensure that the leads are properly connected. When they are properly connected, a message appears indicting recovery and the therapy session continues where it left off.



Recovery Screen

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Finding the Software Version and Serial Number

When you turn on the IF 3WAVE, two title screens appear. The first screen displays the Empi logo and the second screen displays the device's logo and the version number of the software. In addition, you can display the serial number of the device. This is useful when you need to report the number for Technical Service.

IF 3WAVE with Function Button Cover Removed

To display the device's serial number:

1. Make sure the device is off.
2. Lift the cover on the front of the device to access the function buttons.
3. Press and hold the number **2** button.
4. While holding the number **2** button, press and release the on/off button.
5. When the Serial Number screen appears in the display, release the number **2** button.
6. Turn the device off.

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Operation

Using the Belt Clip

The IF 3WAVE is supplied with a belt clip so that you can clip the device to your clothing, allowing you to receive your treatment while going about your daily activities. The belt clip's locking tab allows you remove the device from the belt clip.

Attaching the Tab

You will need to attach the tab to the device. Refer to the illustration below as you follow the steps.

To attach the tab to the device:

1. Lay the IF 3WAVE face down on a soft cloth.
2. Position the tab in the round depression so that the two scores are vertical to the length of the device.
3. Insert the supplied Phillips screw into the hole and tighten, but do not over tighten. The tab should be snug.

Attaching the tab to the IF 3WAVE

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Attaching the Belt Clip

You can leave the belt clip on your clothing and attach and detach the IF 3WAVE from the clip.

To attach the IF 3WAVE to the belt clip:

1. Squeeze the belt clip so that it opens and slip it onto your belt or clothing.
2. Position the IF 3WAVE so that it is parallel to the clip.
3. Slide the tab down into the slot until it clicks.
4. Rotate the device so that it hangs freely on the clip.

To remove the IF 3WAVE from the belt clip:

1. Rotate the device so that it is parallel to the clip.
2. Press the release button at the top of the belt clip downward.
3. While pressing the button, slide the device upward.
4. Release the button.

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Notes

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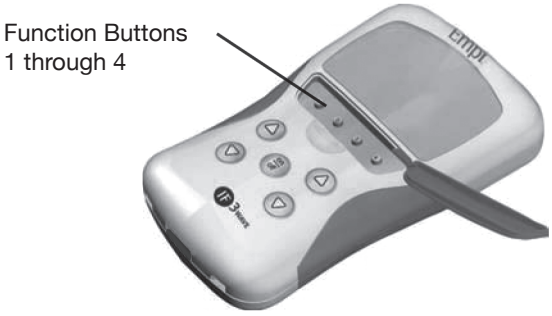
This setup section is intended for the health care professional (clinician), and access is protected with a password. In some cases, patients are granted access to the setup so that they can adjust their treatment. The setup displays are used to set up the desired treatment programs, select the desired display language, and edit existing treatment programs.

Function Buttons and Making Selections

Function Buttons

Four function buttons, numbered 1 through 4, are used for the setup. Open the protective cover to access them. Icons on the LCD directly above the buttons indicate the function of each button. Buttons without a function designation on the LCD are not used for that screen.



Function Buttons With Protective Cover Removed

The button's function may change with various screens. These functions are:

- **Scroll (Downward pointing arrow or Double Arrows)** – Scrolls through the listed choices. When the last item in the list is reached, it returns to the top of the list. The button must be pressed and released to advance to the next item listed.
- **Select** – Selects the highlighted option, puts it into the program memory, and then goes to the next item or display.
- **Back** – Returns to the previous screen.
- **Up** – Used when editing programs. It moves the highlighted program upward in the program list.

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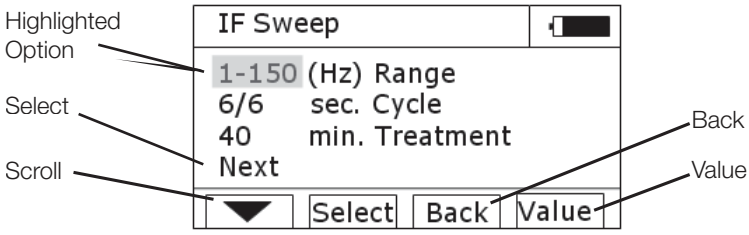
Clinician Setup

- **Value** – Scrolls through a list of predefined values for the highlighted item. It starts at the top of the list, continues through the list, and returns to the top of the list. When the list has less than 15 choices, the clinician must press and release the button. For longer lists, the button can be pressed and held to advance through the list.
- **Save** – Saves the treatment program and places it on the Program List screen.
- **Yes** – Used after saving a treatment program. If selected, it returns to the Select Stim Type screen.
- **No** – Used after setting up a treatment program. If selected, it returns to the Program List screen.
- **Delete** – Deletes a program when editing the Edit Program List screen.



Sample LCD Icons

Making Selections

Many screens offer options to choose from. The first option on a screen is highlighted when the screen is entered. Use the **Scroll** button to highlight an option and then press the **Select** button.

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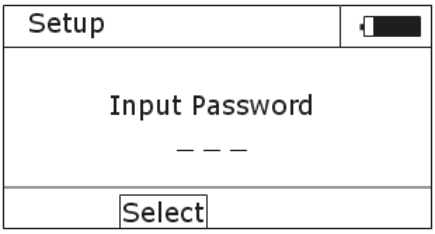
Entering the Setup Mode

To enter the setup screens, with the IF 3WAVE off, press and hold the **Start** button for more than five seconds. When the Setup Input Password screen appears release the button.

Entering the Password

The Password Card provides a code for the clinician to access the device setup functions.

Using the **Function** buttons, enter the password and then press the **Select** button. A Password Acceptance screen appears and then the Setup screen appears.



Password Input Screen

If the password is not accepted after three attempts, the patient's Program List screen appears. If the clinician is unable to access the Setup Mode with the password, contact Empi at 1-800-328-2536.

NOTE: The setup password is provided on a separate card and packaged with the device. The card should be removed from the package before giving the unit and documentation to the patient. Keep the password in a safe place such as the patient's medical file.

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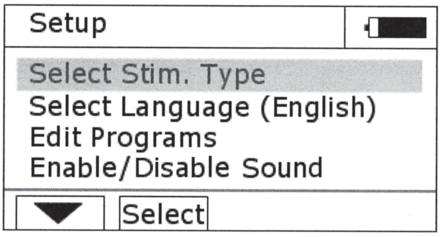
Clinician Setup

System Selection Setup

From this screen, the clinician can choose from a list of options.



Setup Selection Screen

- **Select Stim Type** – This option allows the clinician to select the type of stimulation program he or she wants to set up.
- **Select Language (English)** – The default language is English. This option allows the clinician to change the language to English, Spanish (USA), or French (Canada).
- **Edit Programs** – This option allows the clinician to delete existing programs from a list or edit existing ones. The IF 3WAVE stores up to ten programs in the Program List.
- **System Sound** – This option allows the clinician to enable or disable units sound.

Stimulation Modalities

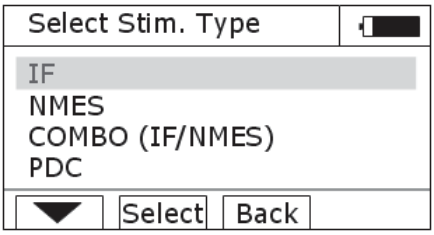
The IF 3WAVE system offers four stimulation modalities:

- IF
- NMES
- Combination (IF/NMES)
- PDC

Each modality offers a variety of programs such as preset, continuous, sweep and manual. Each program offers treatments for conditions such as low back pain, neck pain, spasm reduction and quadriceps re-education.

Selecting the Stimulation Modality

The Select Stimulation Type screen displays the four stimulation modalities. To access the desired modality, use the **Scroll** button to highlight it and press the **Select** button.



Select Stimulation Type Screen

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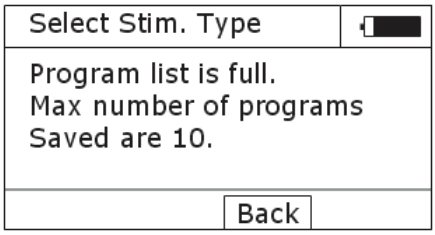
Clinician Setup

Stimulation Program Selection Screen

If a “Program list is full” message appears on the Select Stimulation Type screen, the clinician will need to delete an existing program from the Program List in order to add another program. The maximum number of saved programs is 10. Press the **Back** button to return to the previous screen. To delete a program, refer to Edit Programs in this Clinician Setup section.

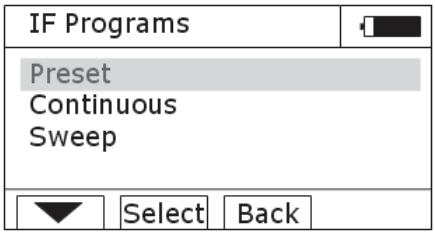


Program List Full Message Screen

Setting Up IF Programs

The IF (interferential) program offers three types of treatments:

- Preset
- Continuous
- Sweep



IF Program Type Selection Screen

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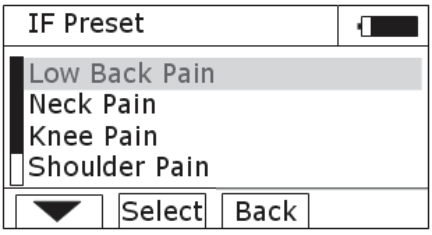
IF Preset Treatments

The IF Preset screen lists preset treatments available for the patient. Preset treatment parameters are not adjustable. The preset treatment programs include:

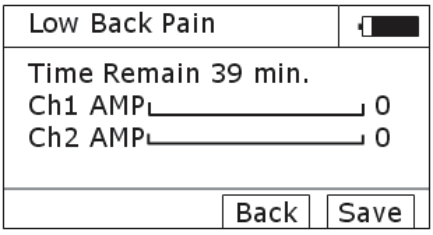
- Low Back Pain
- Neck Pain
- Knee Pain
- Shoulder Pan
- Wrist Pain
- Ankle Pain
- IC Pain



IF Preset Treatment Selection Screen

To select an IF Preset treatment program:

1. Using the **Scroll** button, highlight the desired treatment.
2. Press the **Select** button.The program's treatment time and amplitude screen appears. The amplitude is set at zero, which the patient adjusts following the clinician's direction.



The Program's Treatment Time and Amplitude Screen

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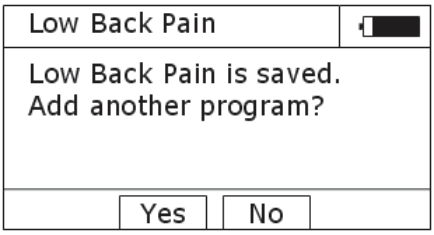
Clinician Setup

3. Press the **Save** button. Saving a program puts it in the Program List. A screen appears and asks if another program should be added.

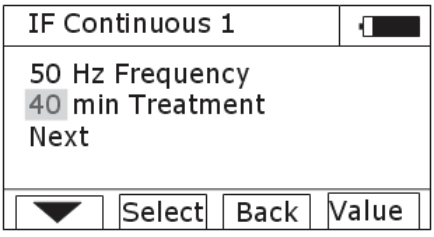


Program is Saved Message Screen

4. Do one of the following:
   a. Press the **Yes** button to go back to the Select Stim Type screen.
   b. Press the **No** button to go to the Setup screen.

NOTE: To return to the Setup screen, press and release the on/off button twice within two seconds and press again to turn the device on. Refer to Running IF, NMES and PDC Treatment Program in the Operation section.

The IF Continuous treatment delivers interference frequency with a fixed beat, which the clinician sets. This screen lists the Hz frequency and the treatment time. Each of these can be edited. Refer to the Specifications section for mode specifications.

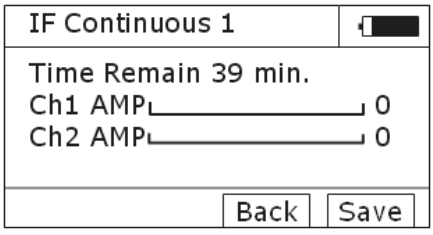


IF Continuous Setup Screen

To set the Continuous parameters:

When the clinician enters the screen, the first parameter is highlighted.

1. With the parameter highlighted, press the **Value** button to scroll through the preset values until the desired one is found.
2. Press the **Select** button. The next parameter is highlighted.
3. Repeat steps 1 and 2 to set each parameter. When finished, the program's treatment time and amplitude screen appears. The amplitude is set at zero, which the patient adjusts following the clinician's direction.



The Program's Treatment and Amplitude Run Screen

4. Press the **Save** button. Saving a program puts it in the Program List. A screen appears and asks if another program should be added.
5. Do one of the following.
   a. Press the **Yes** button to go back to the Select Stim Type screen.
   b. Press the **No** button to go to the Setup screen.

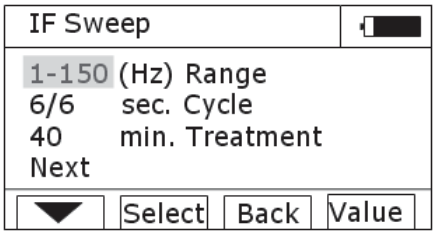
NOTE: To return to the Setup screen, press and release the on/off button twice within 2 seconds and press again to turn the device on. Refer to Running IF, NMES and PDC Treatment Program in the Operation section.

Clinician Setup

IF Sweep Treatment

The Sweep treatment modulates the beat frequency over a range. It ramps up from minimum to maximum and ramps down from maximum to minimum for the set amount of time.

This screen lists the frequency range in Hz, the modulating cycles in seconds (time), and the treatment time in minutes. The clinician can edit each of these. Refer to the Specifications section for mode specifications.



IF Sweep Setup Screen

To set the Sweep parameters:

When the clinician enters the screen, the first parameter is highlighted.

1. With the parameter highlighted, press the **Value** button to scroll through the preset values until the desired one is found.
2. Press the **Select** button. The next parameter is highlighted.
3. Repeat steps 1 and 2 to set each parameter. When finished, the program's treatment time and amplitude screen appears. The amplitude is set at zero, which the patient adjusts following the clinician's direction.
4. Press the **Save** button. Saving a program puts it in the Program List. A screen appears and asks if another program should be added.
5. Do one of the following.

   a. Press the **Yes** button to go back to the Select Stim Type screen.

   b. Press the **No** button to go to the Setup screen.

NOTE: To return to the Setup screen, press and release the on/off button twice within two seconds and press again to turn the device on. Refer to Running IF, NMES and PDC Treatment Program in the Operation section.

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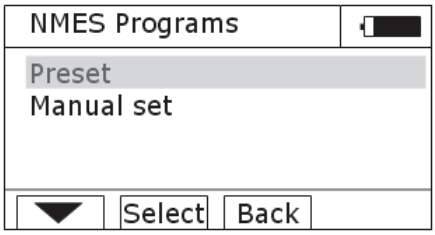
Setting Up NMES Programs

The NMES (Neuromuscular Electrical Stimulation) offers two treatments. Refer to the Specifications section for mode specifications.

- Preset
- Manual Set

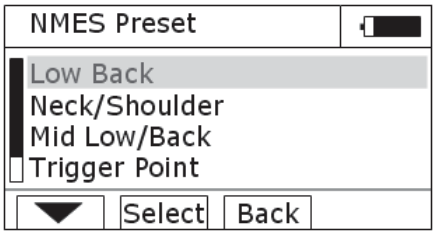


NMES Program Selection Screen

NMES Preset Treatments

This screen lists preset treatments available for the patient. Preset treatment parameters are not adjustable. The preset choices are:

- Low Back
- Neck/Shoulder
- Mid Low/Back
- Trigger Point
- Quadriceps Strengthening
- Quadriceps Re-education



NMES Preset Treatment Selection Screen

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Clinician Setup

To select a NMES Preset treatment:

When the clinician enters the screen, the first treatment is highlighted.

1. Scroll to highlight the desired treatment.
2. Press the **Select** button. The program's treatment time and amplitude screen appears. The amplitude of each channel is zero, which the patient adjusts following the clinician's direction.
3. If the program is suitable, press the **Save** button. Saving a program puts it in the Program List. A screen appears and asks if another program should be added.
4. Do one of the following.

   a. Press the **Yes** button to go back to the Select Stim Type screen.

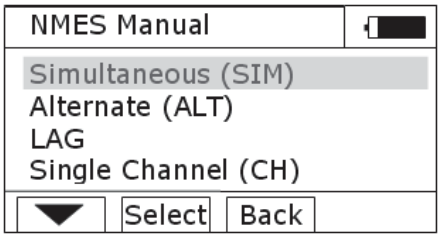
   b. Press the **No** button to go to the Setup screen.

NOTE: To return to the Setup screen, press and release the on/off button twice within two seconds and press again to turn the device on. Refer to Running IF, NMES and PDC Treatment Program in the Operation section.

NMES Manual Treatments

The clinician sets up and stores one manual muscle stimulation treatment. These programs can be set up using a single channel output or two channel outputs. From this screen the following treatments can be edited:

- Simultaneous
- Alternative
- LAG
- Single Channel



NMES Manual Program Selection Screen

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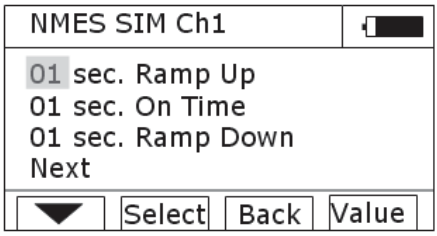
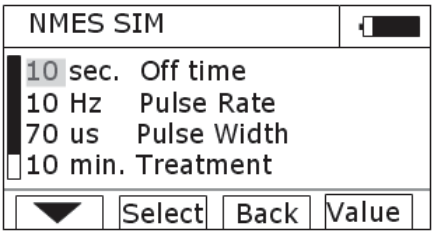
NMES Simultaneous or Alternative Treatments

The clinician sets the Ramp Up, On Time, and Ramp Down parameters for each channel. Then the Pulse Width, Pulse Rate, Off Time, and Treatment time are set. Refer to the Specifications section for mode specifications.

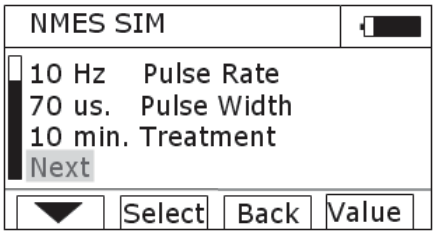
NOTE: The screens and set up procedure for the Simultaneous and Alternative programs are the same.



NMES Simultaneous Set Channel 1 Screen



Top Portion



Bottom Portion

NMES Simultaneous Setup Screens

To set the Simultaneous and Alternative parameters:

1. Highlight the appropriate treatment on the NMES Manual screen and press the **Select** button. The program's Set Ch1 screen appears, and the first parameter is highlighted.
2. Press the **Value** button to scroll through the preset values until the desired one is found.
3. Press the **Select** button. The next parameter is highlighted.

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Clinician Setup

4. Repeat steps 2 and 3 to set the values for all parameters. When finished, the program's treatment time and amplitude screen appears. The amplitude is set at zero, which the patient adjusts following the clinician's direction.

5. Press the **Save** button. Saving a program puts it in the Program List. A screen appears and asks if another program should be added.

6. Do one of the following.

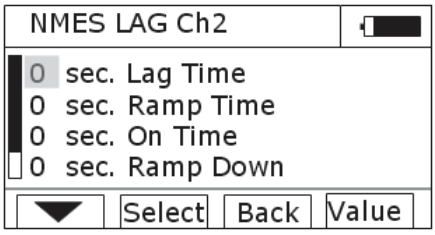
   a. Press the **Yes** button to go back to the Select Stim Type screen.

   b. Press the **No** button to go to the Setup screen.

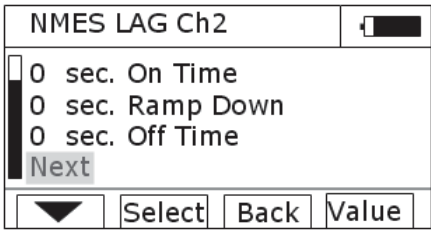
NOTE: To return to the Setup screen, press and release the on/off button twice within two seconds and press again to turn the device on. Refer to Running IF, NMES and PDC Treatment Program in the Operation section.

NMES LAG Treatment

On the first screen, the clinician sets the Ramp Up, On Time, Ramp Down, and Off Time parameters for Channel 1. The same parameters, plus Lag Time, for Channel 2 are set. Finally the Lag parameters are set. Refer to the Specifications section for mode specifications.



Top Portion



Bottom Portion

NMES LAG Setup Screen

To set the LAG parameters:

1. Highlight the LAG treatment on the NMES Manual screen and press the **Select** button. The NMES LAG Set Ch1 screen appears.

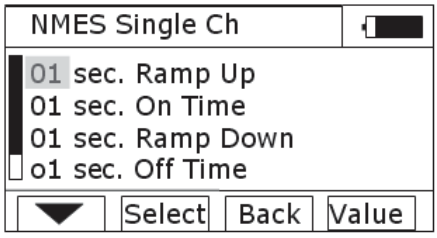
2. Press the **Value** button to scroll through the preset values until the desired one is found.

3. Press the **Select** button. The next parameter is highlighted.
4. Repeat steps 2 and 3 to set the values for all parameters. When finished, the program's treatment time and amplitude screen appears. The amplitude is set at zero, which the patient adjusts following the clinician's direction.
5. Press the **Save** button. Saving a program puts it in the Program List. A screen appears and asks if another program should be added.
6. Do one of the following.
   a. Press the **Yes** button to go back to the Select Stim Type screen.
   b. Press the **No** button to go to the Setup screen.

NOTE: To return to the Setup screen, press and release the on/off button twice within two seconds and press again to turn the device on. Refer to Running IF, NMES and PDC Treatment Program in the Operation section.

NMES Single Channel Treatment

On this screen, the Ramp Up, On Time, Ramp Down, Off Time, and Pulse Width parameters are set up. Refer to the Specifications section for mode specifications.



NMES Single Channel Setup Screen

To set the Single Channel parameter:

1. Highlight the Single Channel treatment on the NMES Manual screen and press the **Select** button. The NMES Single Ch Set screen appears and the first parameter is highlighted.
2. Press the **Value** button to scroll through the preset values until the desired one is found.

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Clinician Setup

3. Press the **Select** button. The next parameter is highlighted.
4. Repeat steps 2 and 3 to set the values for all parameters. When finished, the program's treatment time and amplitude screen appears. The amplitude is set at zero, which the patient adjusts following the clinician's direction.
5. Press the **Save** button. Saving a program puts it in the Program List. A screen appears and asks if another program should be added.
6. Do one of the following.

   a. Press the **Yes** button to go back to the Select Stim Type screen.

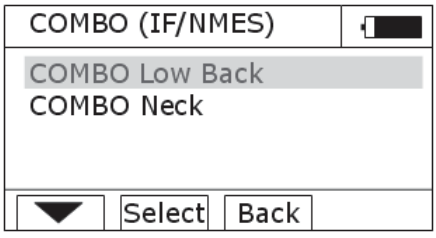
   b. Press the **No** button to go to the Setup screen.

NOTE: To return to the Setup screen, press and release the on/off button twice within two seconds and press again to turn the device on. Refer to Running IF, NMES and PDC Treatment Program in the Operation section.

Setting Up Combination IF/NMES Programs

The combination of IF and NMES programs offers two preset treatments which are not adjustable. Refer to the Specifications section for mode specifications.

- COMBO Low Back
- COMBO Neck



Combination IF/NMES Treatment Selection Screen

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To set the combination IF/NMES treatments:

1. Highlight the desired treatment on the COMBO (IF/NMES) screen.
2. Press the **Select** button. The program's treatment time and amplitude screen appears. The amplitude is set at zero, which the patient adjusts following the clinician's direction.
3. Press the **Save** button. Saving a program puts it in the Program List. A screen appears and asks if another program should be added.
4. Do one of the following.
   a. Press the **Yes** button to go back to the Select Stim Type screen.
   b. Press the **No** button to go to the Setup screen.

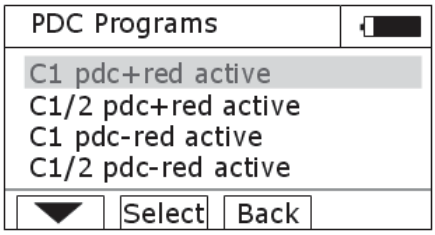
NOTE: To return to the Setup screen, press and release the on/off button twice within two seconds and press again to turn the device on. Refer to Running IF, NMES and PDC Treatment Program in the Operation section.

Setting Up PDC Programs

The PDC (Pulsed Direct Current) offers four treatments. The treatment may be run using one or two channels. When using two channels, both channels deliver a net DC output. Refer to the Specifications section for mode specifications.

NOTE: If only one treatment area is required, select the C1 pdc+red active or C1 pdc–red active program and connect the lead wire to the Ch1 output jack.

- Channel 1 PDC (+)
- Channel 1 PDC (–)



PDC Treatment Selection Screen

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Clinician Setup

NOTE: If two treatment areas are required, select the C1/C2 pdc+red active or C1/C2 pdc–red active program and connect both lead wires to the device in the Ch1 and Ch2 output jacks. Refer to Reverse Splitter in the Components section.

- Channels 1 and 2 PDC (+)
- Channels 1 and 2 PDC (–)

To set the PDC (+) or PDC (–) parameters:

The setup procedures are the same for the Channel 1, and Channels 1 and 2 treatments.

1. Highlight the desired treatment on the PDC Programs screen and press the **Select** button. The program's treatment time parameter screen appears.
2. Press the **Value** button to set the treatment time.
3. Press the **Select** button. The program's treatment time and amplitude screen appears. The amplitude is set at zero, which the patient adjusts following the clinician's direction.
4. Press the **Save** button. Saving a program puts it in the Program List. A screen appears and asks if another program should be added.
5. Do one of the following.

   a. Press the **Yes** button to go back to the Select Stim Type screen.

   b. Press the **No** button to go to the Setup screen.

NOTES:

To return to the Setup screen, press and release the on/off button twice within two seconds and press again to turn the device on. Refer to Running IF, NMES and PDC Treatment Program in the Operation section.

The large single electrode (Dispersal Electrode) is used for one channel and two channel PDC treatments.

The reverse splitter is connected to the lead wires when using two channel PDC. The black pins from both Ch1 and Ch2 must be connected to the female connectors on the reverse splitter. The pin connector on the reverse splitter should be connected to the large dispersive electrode for the device to work properly. The reverse splitter is not used for one channel PDC treatments.

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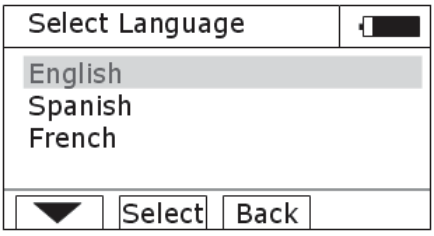
Selecting the Language (English)

The default language is English. The IF 3WAVE can be used and programmed in English, Spanish (USA), and French (Canada). When the desired language is selected, all functions are displayed in that language. The IF 3WAVE can be set up in one language and then changed for a patient who reads one of the other languages.



Select Language Screen

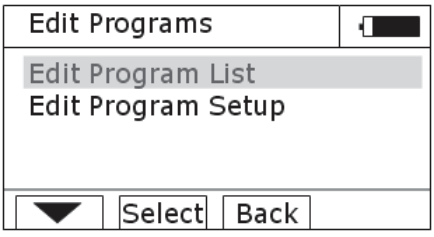
To choose a different language:

1. Scroll to the desired language.
2. Press the **Select** button.

Editing Programs

From this screen, you can choose from two options:

- **Edit Program List** – Allows you to delete programs from the Program List screen.
- **Edit Program Setup** – Allows you to edit existing programs in the Program List screen.



Edit Programs Screen

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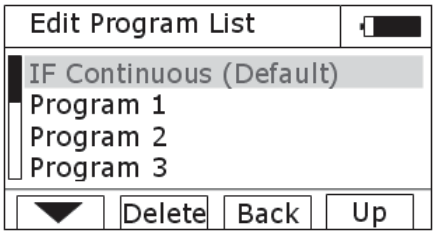
Clinician Setup

Edit Program List

The Program List holds up to 10 programs. These can be a combination of preset and custom programs. All programs, except the IF Continuous Treatment program, can be deleted from the list. The IF Continuous program is always at the top of the list. The order in which the programs are listed can be changed.



Edit Program List Selection Screen

To delete a program from the list:

1. On the Setup screen, highlight **Edit Programs** and press the **Select** button. The Edit Programs screen appears.
2. Highlight **Edit Program List** and press the **Select** button. The Edit Program List screen appears with a list of current programs.
3. Highlight the program you want to delete and press the **Delete** button.
4. When finished, press the **Back** button to return to the Edit Program List screen.
5. To return to the Setup screen, press the **Back** button again.

To move a program up in the list:

1. On the Setup screen, highlight **Edit Program List** and press the **Select** button. The Edit Program List screen appears with a list of current programs.
2. Highlight the program you want to move up and press the **Up** button.
3. When finished, press the **Back** button to return to the Edit Program List screen.
4. To return to the Setup screen, press the **Back** button again.

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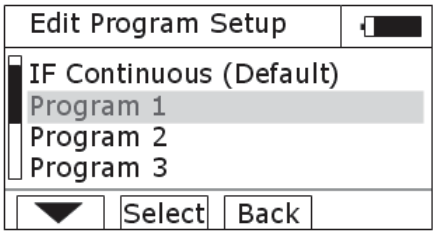
Edit Program Setup

The clinician can edit existing programs without having to delete the program and setting it up again. This feature can also be used to edit an existing program and save it as a new program. The parameters of preset treatments cannot be edited.



Edit Program Setup Screen

To edit an existing program:

1. On the Setup screen, highlight **Edit Programs** and press the **Select** button. The Edit Program Setup screen appears.
2. Highlight **Edit Program Setup** and press the **Select** button. The Edit Program Setup screen appears with a list of current programs.
3. Highlight the program to be edited and press the **Select** button. A screen with the parameters for the selected program appears.
4. Edit the settings as needed. For assistance, see the appropriate procedures in this section. After completing the last screen, a screen prompts whether to save the program or edit another one.
5. Do one of the following:
   a. Highlight **Save Changes** and press the **Select** button. This saves the program with the same name.
   b. Highlight **Save as New** and press the **Select** button. This saves the program with a new name.
   c. Highlight **Back to Edit Program** and press the **Select** button. This returns to the Edit Program List screen. When completed, a message screen appears confirming that the program was saved.

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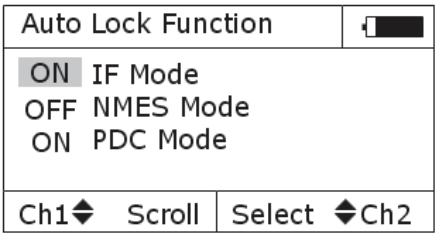
Clinician Setup

Enabling/Disabling System Sound

1. On the Setup screen, highlight System Sound and press the select button. Available options appears and ON is highlighted
2. Press the Arrow button to select the desired option
3. When completed press the Select button

Enable or Disable the Auto Lock

The auto lock feature prevents accidental changes to the amplitude output during treatment. It locks the amplitude 30 seconds after the patient has set it. The patient can unlock the setting temporarily to adjust the amplitude. By default, the auto lock feature is enabled for the IF and PDC programs and disabled for the NMES program.



Auto Lock Function Screen

To enable or disable the auto lock:

1. With the IF 3WAVE turned off, press and hold the **Ch1** Δ button while turning the device on. The Auto Lock Function screen appears.
2. Use the **Ch1** Δ or ∇ buttons to highlight the parameter.
3. Use the **Ch2** Δ or ∇ buttons to toggle between On and Off.

   Note: Change will be applied at next power up.
4. When finished, turn the device off.

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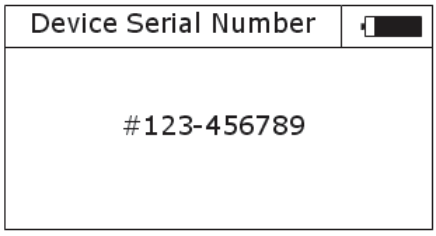
Displaying the Serial Number

Each IF 3WAVE has its own serial number, which should be recorded.



Device Serial Number Screen

To display the serial number:

1. With the IF 3WAVE turned off, press and hold the **Function 2** button while turning the device on. The Device Serial Number screen appears.
2. When finished, turn the device off.

Notes

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Specifications

General Specifications

Parameters	Device Specifications
Dimensions	3.89 x 6.33 x 1.42 in. (9.7 x 16.0 x 3.6 cm)
Weight	12 oz. (350 gm) with battery
Power Source	3.6 Vdc rechargeable Lithium ion battery, 3000 mAh.
Electrical Protection Rating	Type BF equipment, battery-operated
Lead Wire Rating	Complies with 21 CRF Part 898 (performance standards for electrode lead wires)
Ambient Operating	Temperature: –4 to 104 °F (–20 to 40 °C)
Conditions	Relative Humidity: 65% ± 20% Atmospheric Pressure: 700 to 1060 hPa (0.69 to 1.05 atm)
Shipping and Storage	Temperature: –4 to 95 °F (–20 to 35 °C)
Condition (1 year)	Relative Humidity: 65% ± 20%
	Atmospheric Pressure: 700 to 1060 hPa (0.69 to 1.05 atm)

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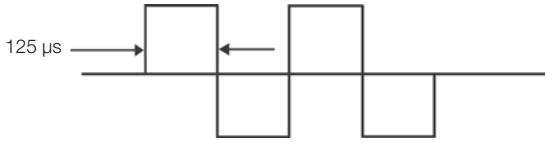
IF Mode Specification

IF Mode

Parameters	Device Specifications
Waveform	Biphasic square wave, zero DC



IF Waveform

Output Frequency	Channel 1 – Fundamental frequency: 4000 Hz fixed Channel 2 – Selectable frequency: 4001 to 4150 Hz Interference frequency: 1 to 150 Hz
Pulse Width	125 µs at 4000 Hz, 120.5 ms at 4150 Hz
Maximum Charge Per Pulse	12.5 µ Coulombs (sum of two channels)
Output Current	0 to 50 mA constant voltage into 500 Ω load, selectable in 1 mA increments
Output Voltage	0 to 25 V into 500 Ω load, 0 to peak

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Specifications

IF Preset Program

Preset Treatment	Treatment Time	Treatment Segment	Sweep Frequency Range 1 Hz Increment	Sweep Ramp Time
Low Back Pain	40 min.	1st 20 min. 2nd 20 min.	60 Hz to 150 Hz 5 Hz to 10 Hz	24 sec. up 24 sec. down
Neck Pain	40 min.	1st 20 min. 2nd 20 min.	60 Hz to 150 Hz 1 Hz to 10 Hz	24 sec. up 24 sec. down
Knee Pain	40 min.	1st 20 min. 2nd 20 min.	60 Hz to 150 Hz 1 Hz to 10 Hz	24 sec. up 24 sec. down
Shoulder Pain	40 min.	1st 20 min. 2nd 20 min.	60 Hz to 150 Hz 1 Hz to 10 Hz	24 sec. up 24 sec. down
Wrist Pain	40 min.	1st 20 min. 2nd 20 min.	80 Hz to 150 Hz 1 Hz to 10 Hz	24 sec. up 24 sec. down
Ankle Pain	40 min.	1st 20 min. 2nd 20 min.	100 Hz to 150 Hz 1 Hz to 10 Hz	24 sec. up 24 sec. down
IC Pain	40 min.	1st 20 min. 2nd 20 min.	100 Hz 10 Hz	—

NOTE: All electrical specifications are ± 10% into 500 Ω load unless otherwise specified.

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IF Continuous Program

Parameters	Device Specifications
Interference (Beat)	1 to 150 Hz, selectable in 1 Hz increments
Frequency	4000 to 4150 Hz
Treatment time	10 to 60 minutes, selectable in 10 minute increments

IF Sweep Program

Program	Sweep Frequency Range	Cycle Time (Selectable)	Treatment Time
1	1 to 150 Hz	6 sec. up / 6 sec. down 12 sec. up / 12 sec. down 24 sec. up / 24 sec. down	10 to 60 min. in 5 min. increments
2	1 to 10 Hz	6 sec. up / 6 sec. down	10 to 60 min. in 5 min. increments
		12 sec. up / 12 sec. down	
		24 sec. up / 24 sec. down	
3	30 to 70 Hz	6 sec. up / 6 sec. down 12 sec. up / 12 sec. down 24 sec. up / 24 sec. down	10 to 60 min. in 5 min. increments
4	80 to 150 Hz	6 sec. up / 6 sec. down	10 to 60 min. in 5 min. increments
		12 sec. up / 12 sec. down	
		24 sec. up / 24 sec. down	

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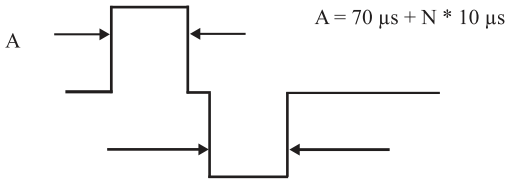
Specifications

NMES Mode Specification

Parameters	Device Specifications
Waveform	Biphasic square wave, zero DC



NMES Waveform

Output Frequency	10 to 80 Hz, selectable in 5 Hz increments
Pulse Width	70 to 300 µs, selectable in 10 µs increments
Maximum Charge Per Pulse	30 µ Coulombs
Output Current	0 to 100 mA constant current into 1000 Ω load, selectable in 1 mA increments
Output Voltage	0 to 100 V into 1000 Ω load, 0 to peak
Ramp Up Time	0 to 10 seconds in 1 second increments
OnTime	1 to 30 seconds in 1 second increments
Ramp Down Time	0 to 10 seconds in 0.5 second increments
Off Time	1 to 60 seconds in 1 second increments
LAG Time	0 to 15 seconds in 1 second increments
Treatment Time	10 to 60 minutes in 5 minute increments

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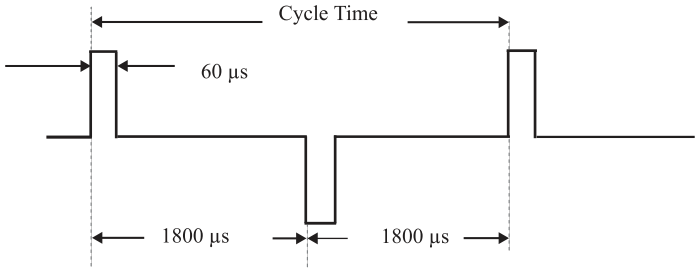
NMES Preset Program

Preset Treatment	Treatment Time	Frequency	Pulse Width	Ramp Up Time	On Time	Ramp Down Time	Off Time
Low Back Spasm Reduction	20 min.	80 Hz	300 µs	2 sec.	8 sec.	2 sec.	2 sec.
Neck/Upper Back Spasm Reduction	20 min.	50 Hz	150 µs	3 sec.	6 sec.	3 sec.	2 sec.
Mid/Low Back Strengthening	15 min.	35 Hz	300 µs	2 sec.	10 sec.	2 sec.	10 sec.
Trigger Point Therapy	30 min.	50 Hz	300 µs	3 sec.	10 sec.	3 sec.	10 sec.
Quadriceps Strengthening	15 min.	50 Hz	300 µs	3 sec.	10 sec.	3 sec.	10 sec.
Quadriceps Re-eductation	15 min.	50 Hz	300 µs	3 sec.	10 sec.	3 sec.	30 sec.

PDC Mode Specification

Parameters	**Device Specifications**
Waveform	Biphasic square wave, net zero DC
	Triphasic square wave, time average DC component
	300 µA maximum



PDC Biphasic Waveform

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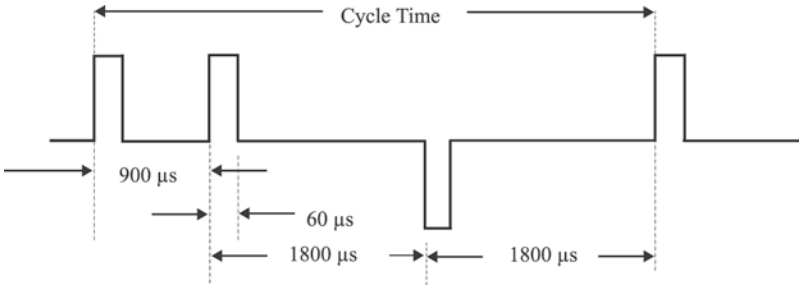
Specifications



PDC Triphasic Waveform

Output Frequency	Biphasic 278 Hz Triphasic 222 Hz
Pulse Width	60 µs
Maximum Charge Per Pulse	6 µ Coulombs
Output Current	0 to 100 mA constant current into 1000 Ω load, selectable in 1 mA increments
Output Voltage	0 to 100 V into 1000 Ω load, 0 to peak
Ramp Up Time	0 to 90% maximum of set output at a rate of 10 mA per seconds 95 to 100% maximum of set output in next 5 minutes
On Time	18 to 48 minutes selectable at 5 minute increments
Ramp Down Time	Maximum to 0 for last 7 minutes
Treatment Time	30 to 60 minutes, selectable at 5 minute increments

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IF/NMES Combination Mode Specification

IF/NMES Combination Preset Treatments

Preset Treatment	Total Treatment Time	First 20 Minutes	Second 20 Minutes	Last 20 Minutes
Low Back	60 min.	**IF Mode** Sweep: 60 to 120 Hz Ramp: 6 sec. up 6 sec. down	**NM Mode** 80 Hz 300 us Pulse Width Ramp: Up 2 sec. On 8 sec. Down 2 sec. Off 2 sec.	**IF Mode** Sweep: 5 to 10 Hz Ramp: 12 sec. up 12 sec. down
Neck	60 min.	**IF Mode** Sweep: 60 to 120 Hz Ramp: 6 sec. up 6 sec. down	**NM Mode** 80 Hz 300 us Pulse Width Ramp: Up 3 sec. On 6 sec. Down 3 sec. Off 2 sec.	**IF Mode** Sweep:1 to 10 hz Ramp: 12 sec. up 12 sec. down

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Troubleshooting

Problem	Possible Cause	Solution
Stimulation weak, even at maximum intensity	Old or dried out electrodes	Replace electrodes
Stimulation weak with fresh batteries	Poor electrode contact	Reapply electrodes, secure firmly
	Worn electrodes	Replace electrodes
Stimulation stops	Poor electrode contact	Reapply electrodes secure firmly
	Damaged or worn lead wires and/or electrodes	Replace lead wires and/or electrodes
	Batteries drained	Replace/recharge batteries
	Therapy time complete	Restart stimulator
Stimulation weakens within minutes after start	Normal “adaptation” response	Increase intensity
Unintentional muscle contractions	Intensity too high	Decrease intensity
Stimulation uncomfortable	Intensity too high	Decrease intensity
	Improper electrode placement	Reposition electrodes
	Poor electrode contact	Reapply electrodes, secure firmly
Stimulation ineffective	Improper electrode placement	Reposition electrodes
“Open” message displayed for one or both channels	Damaged, worn or loose lead wires	Replace or resecure lead wires
	Electrodes not properly applied	Reapply electrodes, secure firmly
“Battery Low” message displayed	Weak battery	Replace/recharge batteries
Display won’t come on when power is turned on	Weak battery	Replace/recharge battery

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Troubleshooting

Problem	Possible Cause	Solution
Unable to turn device off during treatment	Improper shut down procedure	Press on/off button twice, rapidly
LED battery indicator does not illuminate during charging	Battery not in charger base	Slide battery into charger base firmly
	Charger base not plugged in	Plug power adaptor into 110 Vac outlet

If problems continue, call Empi's Technical Service department at 1-800-328-2536.

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Glossary

This Glossary contains definitions of terms and abbreviations that apply to the IF 3WAVE system and are used within this manual.

Term	Definition
Alternate treatment	The output of channels 1 and 2 operate at different times.
Amplitude	The level of output.
Chronic pain	Continuous, long-term pain.
Clinician	Licensed health care professional such as physician, nurse, or physical therapist.
Continuous stimulation	An output mode used by the patient to adjust the stimulation to a maximum comfort level.
Electrode	A medium used to apply electric current.
Frequency	The number of pulses per second used to describe pulsed electrical currents.
IF	Interferential modality. A type of electrotherapy that uses two separate electrical frequencies to stimulate large impulse nerve fibers. Helps relieve pain and increase fluid movement.
LAG treatment	The output for channel 2 starts after the output of channel 1.
LCD	Liquid Crystal Display. The user interface where all messages and information appears. The user uses this to interact with the stimulator.
Modality	The stimulation type. IF, NMES, Combination of IF and NMES, and PDC.
NMES	Neuromuscular Electrical Stimulation modality. The use of electrical stimulation to contract a muscle. The treatment output cycle for each channel occurs simultaneously.
Off time	The time period of the treatment where there is no stimulation.
Patient	The person who is undergoing medical investigation or treatment.
PDC	Pulsed Direct Current modality.
Program type	The type of program available within a modality such as sweep, continuous, manual set, and preset.
Ramp down	Time period of the treatment that decreases from the level that the patient set during continuous stimulation down to no stimulation.

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Glossary

Term	Definition
Ramp up	Time period of the treatment that increases from no stimulation to the level that the patient set during continuous stimulation.
Simultaneous treatment	The output for channels 1 and 2 start at the same time.
Single Channel treatment	Output is at only channel 1.
Treatment time	The total time the patient is receiving treatment from the device.
Treatment type	The type of treatment within a program type such as for low back pain, neck pain, and quadriceps reduction.

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Replacement Parts

The following replacement parts can be ordered from Empi at 1-800-328-2536:

Part	Part Number
IF 3WAVE Stimulator	7110S
Battery- Lithium Ion Rechargable (North America Only)	360102
Carrying Case	370000 series
Charger Base (North America Only)	201800
Power Supply	590029
Electrodes - Optional	Refer to Clinic Services
Lead Wires	620000 series
Reverse Splitter	620049
User's Manual	926940

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Notes

Caution

Federal Law (USA) restricts this device to sale by or on the order of a physician (or licensed practitioner).

The following symbols are located on the back of the IF 3WAVE stimulator:

	IEC 417-5333 Type BF Applied Part
	IEC 348 Attention, consult accompanying documents
	Lead wires comply with the Performance Standard for electrode lead wires (21 CFR part 898)
	Electronic Testing Lab, indicates product meets US and Canadian product safety standards
	Susceptible to electro-static charge
CSA	Canadian Standards Association

This device complies with UL 60601-1 and CSA C22.2 No.601-1-M90.

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